

A Challenge, Daunting, Nevertheless an Opportunity
Cyborgs, Protection against Terrorism

By

Lori Young
California Highway Patrol

June, 2011

COMMAND COLLEGE CLASS 49

This Command College Project is a FUTURES study of a particular emerging issue in law enforcement. Its purpose is NOT to predict the future, but rather to project a number of possible scenarios useful for strategic planning consideration in anticipation of the challenging and emerging landscape facing policing organizations.

This journal article was created using the futures forecasting process of Command College and its outcomes. Defining the future differs from analyzing the past because the future has not happened. In this project, useful alternatives have been formulated systematically so that the planner can respond to a range of possible future environments.

Managing the future means influencing the future; creating it, constraining it, adapting to emerging trends and events in a way that optimizes the opportunities and minimize the threats of relevance to the profession.

The views and conclusions expressed in this Command College project are those of the author and are not necessarily those of the Commission on Peace Office Standards and Training. (POST)

Copyright 2012
Lori Young; CA Commission on POST

A Challenge, Daunting, Nevertheless an Opportunity Cyborgs, Protection against Terrorism

Introduction

In 2025, San Francisco, CA, a new cyborg joined the police force. The new cop garnered a lot of attention. Not exactly graceful, the officer tipped the scales at 550 pounds. This cop did not walk the beat either -- it gilded along the street on wheels. It was called SF CY#1, and it was the squad's first robotic officer with the ability to apply computer programs to draw links and make predictions about people's behavior; preventing a terrorist attack instead of simply responding to it. SF CY#1 is a particularly sophisticated piece of machinery designed to handle some of the most dangerous incidents polices officers can encounter.

From this day forward, cyborgs will play a larger role in active shooter incidents, civil disturbances, burglary and arson investigations, the safe guard of historical landmarks and counterterrorism. Police officers would then transition to deployment into our communities only as a means to maintain traditional law enforcement services and quality of life issues; the cyborg cop would be the primary tool to meet the challenge of terrorism and violent crime; perhaps a daunting, but emerging opportunity. Although the use of robotic cops may feel like science fiction, the future is closer than you might think.

Why Do We Need a Cyborg?

A cyborg will be a new generation of officer, far different from the law enforcement officer of today. Cyborgs in the near future may look and move like humans or hummingbirds, tractors or tanks, cockroaches or crickets. In fact, many of these systems are already either in development or use in the military and other sectors. In this

envisioned future, an intelligence analyst would manage the cyborg's activities, remotely controlled by an intelligence analyst from a console specifically designed for the cyborg. In 2008, the predicted cost of research and development to design a cyborg (e.g., a bionic man) would be \$50 million to \$100 million.¹ Of course, as systems become more commonplace, and are deployed in more settings, the cost per unit should drop substantially. This means that, in the near future, cost will be only one factor in our decision to employ robotics; the primary assessment will be how to deploy these systems to accomplish our primary goal of public safety. As we consider this future, it is useful to consider how cyborg research has progressed, where it is going, and then how law enforcement might take advantage of it for the safety of our communities.

Cyborgs Past

The history of robots can be traced back to World War II. In 1934, hobbyist Reginald Denny thought his radio-controlled planes would make perfect target drones for anti-aircraft gunners and pitched it to the US Army. In 1940, the Army ordered 53 of the RP-4, renaming it the OQ-1.² A few months later the attack on Pearl Harbor and America's entry into the war created an urgent need for anti-aircraft gunners—and target drones. During the war the U.S. military bought nearly 15,000 OQ-1s, making it the first mass-produced unmanned plane in history. This technology is a primary driver of the desire to develop robotics for military use. Robotics, a tool that started out as unusual and narrow in scope and acceptance, has literally revolutionized military operations and rapidly becoming adapted for non-military uses, including law enforcement.

¹ Aaron Smith. (2008)CNN Money. "What would the \$6 Million Man cost today?" http://money.cnn.com/galleries/2008/pf/0805/gallery.inflation_pop_culture/. Retrieved March 16, 2012.

² P. W. Singer. (May 05, 2011) "Drones don't die-A history of military robotics". <http://www.historynet.com/drones-dont-die-a-history-of-military-robotics.htm>. Retrieved February 10, 2012.

In 2005, the New York Times reported a Pentagon prediction that robots will be a major fighting force in the American military in less than a decade, hunting and killing enemies in combat. The prediction included the current deployment of an armed version of a bomb-disposal robot in Baghdad, capable of firing 1,000 rounds a minute. Though controlled by a soldier with a laptop, the robot was the first thinking machine of its kind to take a front-line infantry position, ready to kill enemies.³ This success was not limited to ground-based systems. In April 2004, an unmanned aircraft made military history by successfully hitting a ground target with a small smart bomb in a test from 35,000 feet.⁴

Once deployed, the military has regularly relied on robots to improve its bomb detection and fighting capabilities. The US military is using explosive-sniffing robots to better detect roadside bombs that account for more than 70% of the US casualties in Iraq.⁵ There were nearly 5,000 robots in Iraq and Afghanistan, up from 150 in 2004. Soldiers used them to search caves and buildings for insurgents, detect and ferret out roadside and car bombs.⁶ Eventually, the Pentagon intends for cyborgs to haul munitions, gather intelligence, search buildings or blow them up.

Today, robots are able to perform major operations while only making small incisions, patients receive many benefits. Robots are used in industrial factories; welding cars and parts together; improving the quality of the vehicles. Robots are in our homes and businesses. In Japan, a robotic vacuum is used in large office buildings. It is fully

³ Tim Weiner. NY Times. (February 16, 2005) A New Model Army Soldier Rolls Closer to the Battlefield. <http://query.nytimes.com/gst/fullpage.html?res=9900E7DD133AF935A25751C0A9639C8B63&pagewanted=all>. Retrieved March 12, 2012.

⁴ Tim Weiner. New York Times News Service. (February 16, 2005) "Pentagon has sights on robot soldiers." http://www.signonsandiego.com/uniontrib/20050216/news_1n16robot.html. Retrieved March 16, 2012

⁵ James Hannah. Associated Press. (March 7, 2007). Bomb-sniffing robots put to test in Iraq. http://www.msnbc.msn.com/id/17874529/ns/technology_and_science-innovation/t/bomb-sniffing-robots-put-test-iraq/ Retrieved March 16, 2012.

⁶ AP. (March 2007) "US military increasingly relying on robots in war." <http://www.taipetimes.com/News/world/archives/2007/03/31/2003354692>. Retrieved March 16, 2012.

autonomous in that it will clean all the hallways of one floor of an office building, without running over anyone or toppling the water cooler, it commandeers an elevator (politely announcing that this elevator is in maintenance mode, please take another car) go to the next level and repeat the process. It can work, unsupervised, all night and never need a coffee break.⁷ Now, robots are ready to strap on guns and fight the battles. Spring 2005, a Talon robot, a semi-autonomous machine capable of firing rifles, machine guns, grenade launchers, and rockets with better accuracy than human soldiers was deployed to Iraq.⁸ They are increasingly being engineered and fabricated for defense, security, surveillance and law enforcement. In policing, we can look into the very near future to imagine what a world with robots might look like in our communities.

Today 2014

The development of cyborgs for law enforcement will deal with hazardous situations; active shooter incidents, crimes in progress incidents, defense against terrorist threats and a myriad of other uses by responding, developing, gathering, accessing, receiving, and sharing intelligence that will be shared among all participating law enforcement agencies. As organized in the near future, the State Department of Justice (DOJ) would be the lead agency and would continue to fulfill its primary mission to provide the highest level of safety, service and security to the people of California. The Counterterrorism Technology Group (CTG), a division of the DOJ under the direct oversight of the State Attorney General, primary task is the development and implementation of the counterterrorism tool – the cyborg. CTG’s primary mission is to

⁷ Allan Douglas. “Is there a robot in your future?”<http://allandouglas.hubpages.com/hub/Is-There-a-Robot-in-Your-Future-part-2>. Retrieved March 16, 2012.

⁸ Gregory M. Lamb. The Christian Science Monitor (January 27, 2005) “Battle bot: the future of war?”<http://www.csmonitor.com/2005/0127/p14s02-stct.html>. Retrieved March 16, 2012

research and develop tools which support ongoing security intelligence and criminal investigations.

In addition, the CTG will coordinate its response with the local allied law enforcement agencies with the proper level of force to mitigate the threat in favor of protecting, life, environment and property. This would mean that CTG would be capable of upgrading and deploying tools with artificial intelligence capable of effectively detecting the presence of any potential threats to public safety protect the environment and high profile locations. This coordinated effort to deploy robotic systems will accelerate the creation of more complex systems, inevitably leading to autonomous robots, or cyborgs, to relieve humans from much of the risk of police actions. Imagine how different “normal” might be within the next decade.

The Future

It is September 21, 2018, at approximately 1200 hours, cyborg C (CYC) is deployed to Union Square, San Francisco maintaining routine surveillance. CYC is routinely deployed to this area to supplement local police resources as a part of a memorandum of understanding between San Francisco Police Department and CTG. There has been a mass walk-out of high school and college students in protest of planned closure of several State University campuses. The students are loud, but peaceful. However, the group has been infiltrated by Vacate San Francisco demonstrators who are known for violent confrontations with police.

CYC is streaming video, coordinating the wireless network of cameras in the area, providing live broadcast images simultaneously to the command staff. CYC has been adapted to recognize non-verbal cues and human emotions through physical postures,

gestures and movements of the crowd. CYC increases law enforcement presence and surveillance activities at planned and unplanned incidents. CYC represents a shift toward technology and its presence at this demonstration has a positive impact on the crowd – no injuries to law enforcement personnel, no damage to private property or public assets and only two arrests.

Simultaneously, CYC conducted non-destructive scan of surrounding buildings and vehicles to determine the presence of biological, radioactive or chemical weapons. CYC's receptor eliminated the need for an officer to approach vehicles with a handheld sensor or try to attach a device to vehicles. CYC conducts real time sweep of the area, analysis and interfaces with GOOGLE Earth to explore the density of the population and access the statistical risk relative to population if an order is made to shelter in place or an evacuation order is necessary. The analyst is able to provide reliable and well vetted options to management related to the scope of possible evacuation strategies. The real-time data provided to executives allows them to evaluate the scene and direct enforcement actions. CYC can interface with the automatic computer phone systems and issue an evacuation order for the area.

While CYC transmits data to the CTG database for analysis, the system performs transparent interfaces with federal, state and local criminal history databases, the International Criminal Police Organization – Interpol, Terrorist Watch List and the No Fly List. CYC identifies an individual of interest and forwards the information to investigators. CYC maintains surveillance of the person of interest until units are in position to affect an arrest.

Farfetched? Unlikely? Think of all the other advances in society and technology where the impossible has knocked down biases and beliefs on their way to reality. Although 2018 might be an optimistic date by which we will see robotic patrol, the true date will inevitably be much closer than detractors may think. And when it does happen, we want to be ready to make executive decisions about their deployment, their support of police operations, and the way they will help protect society in the future.

Conclusion

It is impossible to predict with precision the success of our adversaries, the criminal element in each of our communities. We can, though, evaluate factors such as crime reduction, increases in arrests, and clearance rates. Police departments should also be interested in developing performance measures for information technologies to gauge whether they are improving department operations and how they relate to the overall achievement of departmental goals.

While still in its infancy, deploying cyborg technologies is both a challenge and an enormous opportunity. The expectation of technology is both a burden and an opportunity. Clearly, the implementation of cyborgs is a way to keep law enforcement officers safe. The capability of a cyborg program will permit law enforcement managers to identify problematic situations and take steps to mitigate or prevent the loss of life, destroy the environment or damage to property. It is up to us to choose how and where; the choice is no longer if, but when.

In a few decades, we might just see a rocket propelled robot officer on wheels directing traffic, clearing accidents from the roadway or discouraging us from j-walking.